

Notice of Allowability

Application No.

10/560,891

Examiner

David K. O'Dell

Applicant(s)

TANAKA ET AL.

Art Unit

1609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amended claims filed on 5 June 2007.
2. ☒ The allowed claim(s) is/are 1-11.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>21 May 2007</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>16 December 2007</u> | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input checked="" type="checkbox"/> Other <u>PTO- 413B, 18 May 2007</u> . |

DETAILED ACTION

1. Claims 1-11 are pending in the current application.

Response to Restriction Election

2. Applicant's election without traverse of Group I in the reply filed on May 2, 2007 was acknowledged by phone.

Group I, Claims 1-11 drawn to compounds and compositions possessing a *p*-biphenyloxy-2,6-pyridyl-*p*-biphenyloxy or a *p*-biphenyloxy-2,6-pyridyl-phenyloxy core where in applicant's Markush structure (I) *n* is 1, $Y^1=Y^2=O$, Ar^1 is biphenyl, Ar^2 is phenyl or biphenyl, *Z* is 2,6-pyridyl, $R_1-R_{10} = H$ or methyl, $R_{12}-R_{15} = H$, and $R_{20}=R_{21}=H$ as shown by the two structures I in Figure 1.

The restriction requirement between groups I-III and was withdrawn, and groups I-III were examined herein. While not stated previously group V of the restriction requirement contains all other groups not delineated in the previous requirement.

Priority

3. The examiner improperly required an amendment to the specification in reference to a priority claim on the first page of the specification and the applicant has pointed this out, by a correct citation of the MPEP. The requirement is hereby withdrawn and the examiner apologizes for this clear error. This application is a national stage of PCT/JP2004/008934, filed June 18, 2004, which claims priority to Japanese application 2003-174545 June 19, 2003. Such priority claim is duly noted in the OATH/DEC.

Reasons for allowance

4. The following is an examiner's statement of reasons for allowance:

A search of groups I-III revealed no prior art that either anticipated or rendered obvious the compounds of the instant case. The examiner perhaps improperly restricted substituents around

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applicant's core and upon contacting applicant's representative, Mr. Davis, by phone (Interview Summary attached), amendments to the claims were discussed. Applicant's expressed strong interest in compounds bearing an alkyl chain length greater than 1 (where n is >1 in Formula 1). The examiner noted that no examples of alkyl chains greater than 1 were prepared in the instant case, however several references germane to the enablement of such species were found by the examiner: Broer, D. J.; Lub, J., and Mol, G. N. "Synthesis and Photopolymerization of a Liquid-Crystalline Diepoxide" *Macromolecules* 1993, 26, 1244-1247. Mallon, Joseph J.; Adams, Paul M. "Synthesis and characterization of novel epoxy monomers and liquid crystal thermosets." *Journal of Polymer Science, Part A: Polymer Chemistry* 1993, 31(9), 2249-60, and Kostromin, S. G.; Tuan, Pham Anh; Shibaev, V. P. "Liquid crystal poly(α -oxiranes) with mesogenic side group." *Vysokomolekulyarnye Soedineniya, Seriya A i Seriya B* 1994, 36(11), 1807-16 (abstract only). All of these references teach either the synthesis of the precursor epoxides with longer alkyl chains between the epoxide moiety and/or the use of such compounds in resins similar to those of the instant case. One would therefore expect such compounds to be easily prepared and upon treatment with curing agent to give at least resins, that may or may not have LQ properties. In addition such alkyl chains bearing ether linkages are also known in the epoxy resin monomer art (Kamata, Mitsutoshi; Ogata, Masaru. "Manufacture of flame-retardant resin compositions for laminates." *Jpn. Kokai Tokkyo Koho* 1988, JP 63006015 A (English abstract). The applicant amended the claims to restrict the chain length and limit the members to methylene and oxygen. The closest prior art is GB 2, 338, 240 (cited by applicant and in the ISR) which teaches resins prepared from monomers which have a phenyl group as Z (in Formula I), no such structures exist in the claims as amended and they are free of the prior art. The examiner

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also pointed out minor typographical errors that were duly amended. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. Claims 1-11 are allowed.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David K. O'Dell whose telephone number is (571) 272-9071.

The examiner can normally be reached on Mon-Fri 7:30 A.M.-5:00 P.M EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on (571) 272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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D.K.O.

R. Desai
6/11/07

**RITA DESAI
PRIMARY EXAMINER**